

REMARKS

Claims 35 through 45 are now pending in the application. Claims 35 and 41 have been amended hereby. Claims 1 through 34 were previously cancelled without prejudice to the subject matter contained therein. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION OF CLAIMS 35, 36, 41-43, AND 45 UNDER 35 U.S.C. § 102

Claims 35, 36, 41-43, and 45 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent JP 408228910 A (the '910 Patent). This rejection is respectfully traversed.

At the outset, Applicant notes that the amendment of claims 35 and 41 hereby have rendered moot the Section 102 rejections.

Claim 35 has been amended to clarify that end portions of the two-way SMA pin are rigidly secured to the first and hinge leafs respectively to provide for transfer of torque in both clockwise and counterclockwise directions from the two-way SMA pin to one of the hinge leafs relative to the other of said hinge leafs, whereby the piano hinge leafs do not pivot about the SMA pin but pivot when a torque is applied as the two-way SMA pin twists in response to the temperature of the two-way SMA pin changing between the austenite temperature to the martensite temperature.

Claim 41 has been amended to clarify that the two-way SMA hinge pin comprises a NiTiInol alloy, and that the first and second tabs at opposite end portions of the two-way SMA hinge pin are rigidly secured to the respective first and second hinge leafs such that the piano hinge is pivoted by the torque generated by the two-way SMA hinge pin in either a clockwise or counterclockwise direction that is transferred to one of the hinge leafs relative to the other of said hinge leafs. The piano hinge leafs do not pivot about the SMA pin, but pivot when a torque is applied in response to the two-way SMA hinge pin twisting as the temperature of the two-way SMA hinge pin changes between the austenite temperature and the martensite temperature.

The Office Action states in note 1 (page 2) that the two-way SMA causes the hinge apparatus to apply a **closing force** to the device coupled to the hinge apparatus.

To the contrary, the pin 7 in Japanese '910 patent **provides an opening force only**. The lid 2 in the '910 patent remains closed by virtue of gravity, and the pin 7 is only capable of providing a torque for lifting the lid 2 (not for closing the lid). The '910 patent teaches a cooking pot having a lid 2 that may initially be lifted or **pivoted about the pin 7** to place food to be cooked into the cooking pot. The pin 7 has an end secured to the lid 2, but does not have an end rigidly secured to the plate 9 (only makes contact with plate 9). When the food is cooked and the temperature of the pin 7 increases, the ends 7c contacting the plate 9 twist to provide a force that causes the lid 2 to open. The pin 7 untwists when heat is removed, but gravity provides a force for closing the lid 2. As such, the pin 7 does not apply a torque in either direction to the lid 2 relative to surface 9. The SMA pin in the '910 patent **does not apply a torque in both an opening and closing direction**, and permits pivotal movement about the pin. To the contrary, the claimed SMA pin is rigidly secured to each hinge leaf, and provides a torque in either direction for pivoting the hinge leafs when the SMA pin twists in response to the pin changing between austenite and martensite temperatures.

Amended claims 35 and 41 clarify that each respective end portion of the SMA pin is rigidly secured to a respective hinge leaf to provide for torque transfer in either direction from the SMA pin to one of the hinge leafs relative to the other hinge leaf. The claimed hinge **does not pivot about the SMA pin**, but rather **pivots in response to a torque applied in either direction** when the SMA pin twisting as it changes between the austenite temperature to the martensite temperature.

Applicant submits that it would not have been obvious to rigidly secure each respective end portion of a pin to each hinge leaf, because doing so would prevent the hinge from pivoting and would be counter-intuitive to the purpose of a conventional hinge. The claims are not obvious in view of the '910 patent, because the claimed hinge does not pivot about the pin as taught in the '910 patent. The present hinge may be used to replace a conventional hinge and mechanized actuator in a Satellite, for example, where gravity cannot be relied on to close a door. Such a novel hinge would eliminate (or least reduce) the need for mechanized actuator to pivot a hinged door.

Furthermore, amended claim 41 clarifies that the two-way SMA hinge pin is made of a NiTi alloy, and that the two-way SMA hinge pin at least partially twists

when the two-way SMA hinge pin changes between an austenite temperature and a martensite temperature of the NiTiInol alloy. The '910 patent does not disclose, teach or suggest the use of a NiTiInol alloy. Accordingly, Applicant submits that claim 41 is further allowable for at least these additional reasons as well.

With regard to dependent claims 36-40 and 42-45, these claims each depend from independent claim 35 or 41, which Applicant believes to be allowable in view of the above remarks. Accordingly, Applicant respectfully submits that claims 36-40 and 42-45 are also in condition for allowance for at least the reasons given above.

REJECTION OF CLAIMS 37-40 AND 44 UNDER 35 U.S.C. § 103

Claims 37-40 and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent JP 408228910 A. This rejection is respectfully traversed.

Claims 37-40 and 44 each depend from independent claim 35 or 41, which Applicant believes to be allowable in view of the above remarks. Accordingly, Applicant respectfully submits that claims 37-40 and 44 are also in condition for allowance for at least the reasons given above.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is now in a condition for allowance.

Applicant believes that he does not owe any fee in connection with this filing. If, however, Applicant does owe any such fee(s), the Commissioner is hereby authorized to charge the fee(s) to Deposit Account No. 08-0750. In addition, if there is ever any other fee deficiency or overpayment under 37 C.F.R. §1.16 or 1.17 in connection with this patent application, the Commissioner is hereby authorized to charge such deficiency or overpayment to Deposit Account No. 08-0750.

Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite

prosecution of this application, the Examiner is invited to telephone the undersigned directly at (314) 726-7502.

Respectfully submitted,

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